PCT/EP2003/008335

Translation

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference PCT 603	FOR FURTHER ACTION	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
International application No. PCT/EP2003/008335	International filing date (*day/month/year*) 29 July 2003 (29.07.2003)	Priority date (*day/month/year*) 31 July 2002 (31.07.2002)
International Patent Classification (IPC) or national classification and IPC H04L 27/18		
Applicant INTERESSENGEMEINSCHAFT FÜR RUNDFUNKSCHUTZRECHTE GMBH SCHUTZRECHTSVERWERTUNG & CO. KG		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 5 sheets, including this cover sheet.

   ☒ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

   These annexes consist of a total of 7 sheets.

3. This report contains indications relating to the following items:

   - I ☒ Basis of the report
   - II ☐ Priority
   - III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
   - IV ☐ Lack of unity of invention
   - V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
   - VI ☐ Certain documents cited
   - VII ☐ Certain defects in the international application
   - VIII ☐ Certain observations on the international application

Date of submission of the demand	Date of completion of this report
27 February 2004 (27.02.2004)	03 December 2004 (03.12.2004)
Name and mailing address of the IPEA/EP Facsimile No.	Authorized officer Telephone No.

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.
PCT/EP2003/008335

I. Basis of the report

1. With regard to the **elements** of the international application:*

☐ the international application as originally filed

☒ the description:

pages 2-18, as originally filed

pages _____, filed with the demand

pages 1,1a,1b, filed with the letter of 17 August 2004 (17.08.2004)

☒ the claims:

pages _____, as originally filed

pages _____, as amended (together with any statement under Article 19

pages _____, filed with the demand

pages 1-15, filed with the letter of 17 August 2004 (17.08.2004)

☒ the drawings:

pages 1/17-17/17, as originally filed

pages _____, filed with the demand

pages _____, filed with the letter of _____

☐ the sequence listing part of the description:

pages _____, as originally filed

pages _____, filed with the demand

pages _____, filed with the letter of _____

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.
These elements were available or furnished to this Authority in the following language _____ which is:

☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).

☐ the language of publication of the international application (under Rule 48.3(b)).

☐ the language of the translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

☐ contained in the international application in written form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. ☐ The amendments have resulted in the cancellation of:

☐ the description, pages _____

☒ the claims, Nos. 16-22

☐ the drawings, sheets/fig _____

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**

* *Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rule 70.16 and 70.17).*

** *Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.*

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	1-15	YES
	Claims		NO
Inventive step (IS)	Claims	1-15	YES
	Claims		NO
Industrial applicability (IA)	Claims	1-15	YES
	Claims		NO

2. Citations and explanations

1. Document

1.1 Reference is made to the following document:

D1: WALDECK B H ET AL: "PERFORMANCE EVALUATION OF TFO-Q2PSK IN GAUSSIAN, MULTIPATH AND FADING CHANNELS", 1999, IEEE AFRICON, 5TH AFRICON CONFERENCE IN AFRICA, CAPE TOWN, SOUTH AFRICA, 28 September 1999 (1999-09-28) to 1 October 1999 (19-10-01), pages 233-238, XP000895832, NEW YORK, USA, ISBN: 0-7803-5547-4.

2. Novelty and inventive step

2.1 **Document D1** is considered to be the prior art closest to the subject matter of **claim 1**. Said document discloses (the references between parentheses relate to D1) a method relating to Q^2PSK signals and, in particular, to specific orthogonal pulse shapes of three different types (page 233, right-hand column, line 1 to page 235, right-hand column, line 14). For the first type, a lowpass filter with Nyquist edges is used, said filter being

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operated at half the possible bit rate. The pulse, which is also orthogonal, is produced by a time shift. The spectra of the two pulses are in the same frequency range. In the second type, too, the spectra are in the same frequency range. In the third type, a duo-binary signal is generated, the pulse responses therein being time-delimited and in the same frequency range. Thus, the subject matter of **claim 1** differs from the known method in that the transmission filters are not in the same frequency range. In particular, there is a subsequent residual-sideband filtering step in which a purely imaginary transfer function is determined from the difference of a first lowpass filter and a second, lowpass filter with a bandwidth that is half that of the first lowpass filter.

The subject matter of **claim 1** is therefore novel (PCT Article 33(2)).

2.2 The problem addressed by the present invention can thus be regarded as that of selecting the transmission filter in such a way as to create a multicarrier system with reduced crosstalk.

The solution to this problem, as proposed in **claim 1** of the present application, involves an inventive step (PCT Article 33(3)) because the use of multicarrier residual-sideband modulation allows real and imaginary channels to be used in an alternating sequence. In this way, arbitrarily reducible in-channel quadrature crosstalk and crosstalk in only one adjacent channel is obtained.

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2.3 **Claims 2-15** are dependent on **claim 1** and, thus, likewise satisfy the requirements of the PCT in respect of novelty and inventive step.